

Imagination Technologies Ltd / Pure

Application For Certification

FCC ID: X280071

Wireless 'AirPlay' Speaker Dock

Model: Pure Contour i1 Air

Trademark: Pure

WiFi Transceiver

Report No.: 130513051SZN-001

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [10-1-12]

Prepared and Checked by:	Approved by:
Sign on file	
William Chen Project Engineer	Billy Li Supervisor Date: 10 October, 2013

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
- This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results referenced from this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
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TRF no.: FCC 15C_Tx_b

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MEASUREMENT/TECHNICAL REPORT

Imagination Technologies Ltd / Pure MODEL: Pure Contour i1 Air

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This report concerns (check one) Original Grant X Class II Change		
Equipment Type: <u>DTS - Part 15 Digital Transmission Systems (WiFi transmitter</u>		
portion)		
Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes NoX		
If yes, defer until :date		
Company Name agrees to notify the Commission by: date		
of the intended date of announcement of the product so that the grant can be issued on that date.		
Transition Rules Request per 15.37? Yes NoX_		
If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [10-01-12 Edition] provision.		
Report prepared by:		
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List of attached file

Exhibit type	File Description	Filename
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
Operation Description	Technical Description	descri.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Confidentiality Letter	request.pdf
Cover Letter	Letter of Agency	agency.pdf
Cover Letter	Certification Agreement	agreement.pdf

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EXHIBIT 1 SUMMARY OF TEST RESULTS

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1.0 **Summary of test results**

Imagination Technologies Ltd / Pure MODEL: Pure Contour i1 Air

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TEST	REFERENCE	RESULTS
Max. Output power	15.247(b)(3)	Pass
6 dB Bandwidth	15.247(a)(2)	Pass
Max. Power Density	15.247(e)	Pass
Out of Band Antenna Conducted Emission	15.247(d)	Pass
Radiated Emission in Restricted Bands	15.247(d)	Pass
AC Conducted Emission	15.207	Pass
Antenna Requirement	15.203	Pass (See Notes)

Notes: The EUT uses Integral Antenna which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.

The EUT has two antennas and only one antenna works at the same moment, the two antennas can't work simultaneously. Test for two antennas have been performed and worst case about two antennas showed in this report.

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EXHIBIT 2 GENERAL DESCRIPTION

TRF no.: FCC 15C_TX_b

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2.0 **General Description**

2.1 Product Description

The Equipment Under Test (EUT) is a Wireless 'AirPlay' Speaker Dock with internal WiFi function operating at 2412-2462MHz for 802.11b/g, 11 channels with 5MHz channel spacing. The EUT can be powered by by AC adapter with input: 100-240 V, 50/60Hz; output: DC 12V, 2.4A. For more detailed features description, please refer to the user's manual.

Type of Modulation: BPSK, QPSK, 16QAM, CCK.

Antenna Type: Integral Antenna.

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

2.2 Related Submittal(s) Grants

This is an application for certification of:

DTS- Part 15 Digital Transmission Systems (WiFi transmitter portion)

Remaining portions are subject to the following procedures:

- 1. Receiver portion of WiFi: exempt from technical requirement of this Part.
- 2. Other Digital Function: (FCC VOC report 130513050SZN-001)

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2009) and KDB 558074. Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "Justification Section" of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch** and located at 6F, Block D, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: 242492).

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EXHIBIT 3

SYSTEM TEST CONFIGURATION

TRF no.: FCC 15C_TX_b

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3.0 **System Test Configuration**

3.1 Justification

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables and accessories were manipulated to produce worst case emissions. The EUT was powered by AC adapter with AC 120V/60Hz (the AC 120V/60Hz was for AC adapter input) during the test. Only the worst case data was reported.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

3.2 EUT Exercising Software

The EUT exercise program (provided by client) used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The worst case configuration is used in all specified testing.

The parameters of test software setting:

During the test, Channel and power controlling software provided by the applicant was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the application and is going to be fixed on the firmware of the end product.

Power Parameters of IEEE 802.11b/g

	Test software setting of IEEE 802.11b/g/n		
Channel Output Power Data rate Modulation type Level		Modulation type	
4.0.44	15.0	802.11b: 1-11Mbps	802.11b: CCK
1,6,11	19.0	802.11g: 6-54Mbps	802.11g: BPSK, QPSK, 16QAM

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3.3 Special Accessories

Adaptor with two ferrite cores attached.

3.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

Uncertainty and Compliance – Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

3.5 Equipment Modification

Any modifications installed previous to testing by Imagination Technologies Ltd / Pure will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch.

3.6 Support Equipment List and Description

This product was tested in the following configuration:

Refer List:

Description	Manufacturer	Model No.
iPod	Apple	A1421
iPhone	Apple	A1303
Audio Cable	N/A	Unshielded, Length 150cm
RJ45 Cable	N/A	Unshielded, Length 300cm
Router	D-link	DIR-655
Adaptor	Pure	Model: KSAS0251200240D5 Input: AC 100-240V, 50/60Hz, 0.9A Output: DC 12V, 2.4A

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EXHIBIT 4

MEASUREMENT RESULTS

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Applicant: Imagination Technologies Ltd / Pure

Date of Test: July 22, 2013 Model: Pure Contour i1 Air

4.0 **Measurement Results**

- 4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b)(3):
 - [] The antenna port of the EUT was connected to the input of a spectrum analyzer. The analyzer was set according to the FCC KDB 558074 spectrum analyzer's integrated band power measurement function with band limits set equal to the EBW band edges and power was read directly in dBm. External attenuation and cable loss were compensated from the measured value.
 - [×] The antenna power of the EUT was connected to the input of a broadband peak RF power meter. The power meter have a video bandwidth that is greater than DTS bandwidth and utilize a fast-responding diode detector. Power was read directly at the EUT antenna terminals. External attenuation and cable loss were compensated from the measured value.

For antennas with gains of 6 dBi or less, maximum allowed Transmitter output is 1 watt (+30 dBm).

IEEE 802.11b (Antenna Gain =1.8dBi) (CCK, 1Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	17.04	50.58
Middle Channel: 2437	18.22	66.37
High Channel: 2462	16.68	46.56

IEEE 802.11g (Antenna Gain = 1.8dBi) (16QAM, 6Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	22.11	162.55
Middle Channel: 2437	21.98	157.76
High Channel: 2462	21.91	155.23

EUT max. output level = 22.11dBm

Cable Loss: 0.5dB

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4.2 Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a)(2):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 KHz according to FCC KDB 558074. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

Limit: The 6 dB Bandwidth is at least 500 kHz.

IEEE 802.11b (CCK, 1Mbps)		
Frequency (MHz)	6 dB Bandwidth (MHz)	
2412	12.56	
2437	12.56	
2462	12.56	

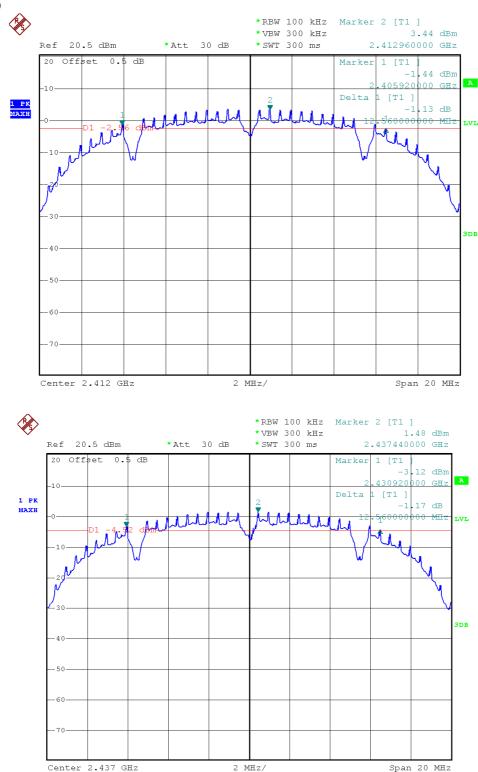
IEEE 802.11g (16QAM, 6Mbps)		
Frequency (MHz)	6 dB Bandwidth (MHz)	
2412	16.36	
2437	16.36	
2462	16.36	

The test plots are attached as below.

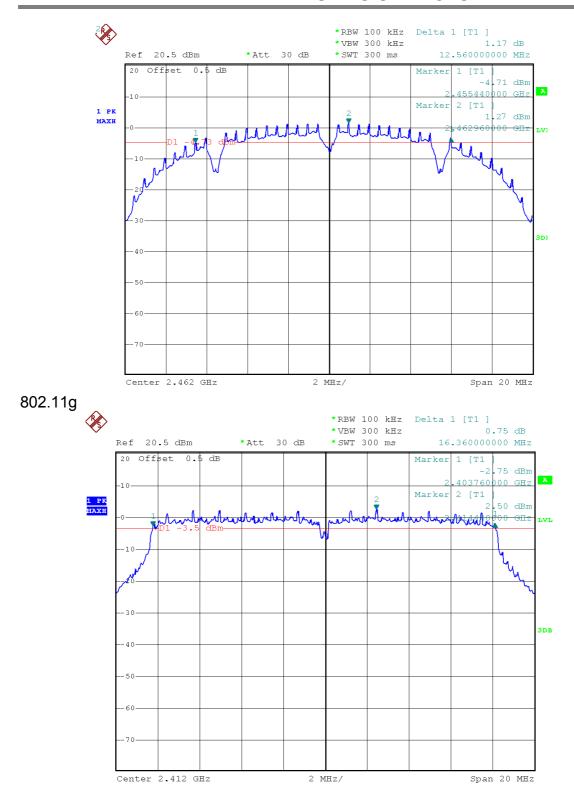
TRF no.: FCC 15C_TX_b

FCC ID: X280071



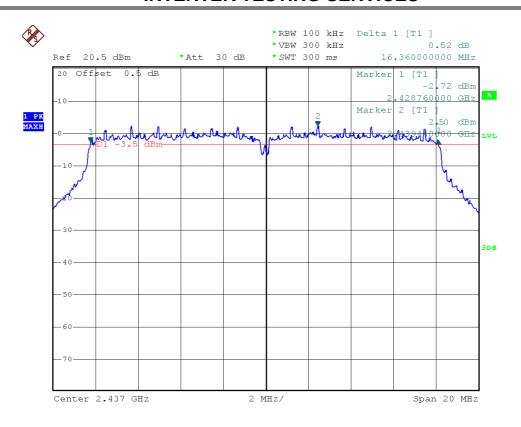


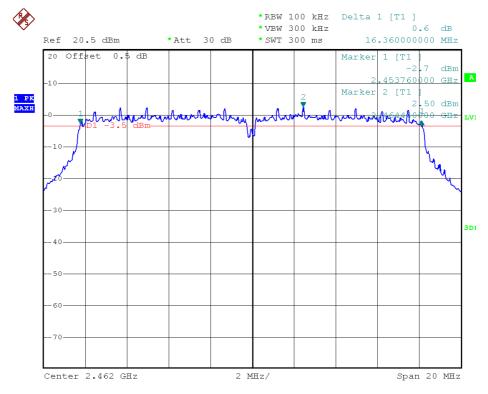
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4.3 Maximum Power Density Reading, FCC Rule 15.247(e):

The Measurement Procedure PKPSD was set according to the FCC KDB 558074.

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

Limit: The Power Density does not exceed 8dBm/ 3 kHz.

IEEE 802.11b (CCK, 1Mbps)		
Frequency (MHz) Power Density with RBW		
2412	3.59	
2437	4.65	
2462	3.51	

IEEE 802.11g (16QAM, 6Mbps)	
Frequency (MHz)	Power Density with RBW 100KHz
2412	2.49
2437	2.52
2462	2.31

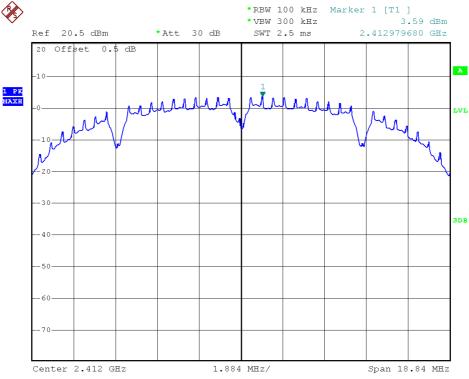
Cable Loss: 0.5dB

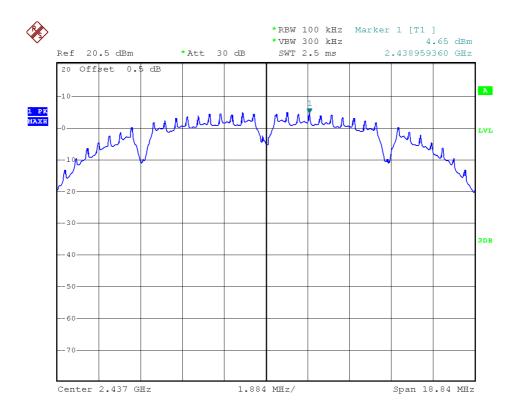
The test plots are attached as below.

TRF no.: FCC 15C_TX_b

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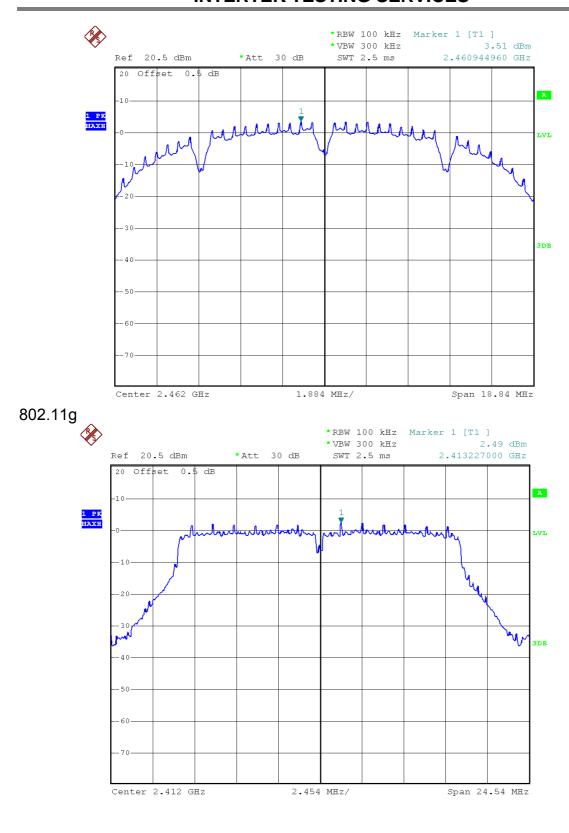






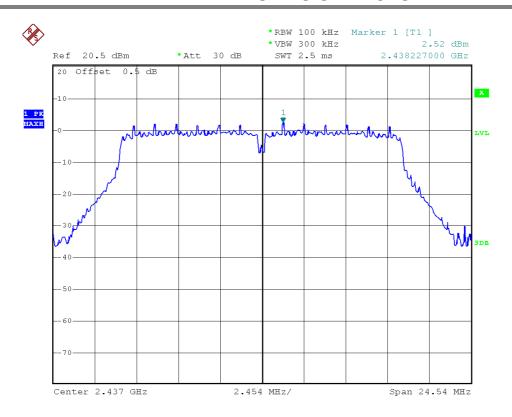
TRF no.: FCC 15C_TX_b

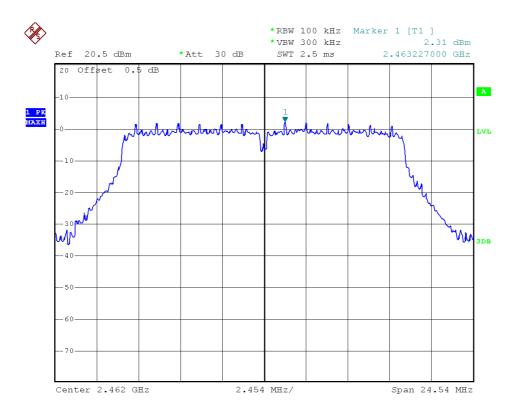
FCC ID: X280071



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4.4 Out of Band Conducted Emissions, FCC Rule 15.247(d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. The Measurement Procedure was set according to the FCC KDB 558074.

Refer to the attached test plots for out of band conducted emissions data with rate of 1Mbps for 802.11b, 6Mbps for 802.11g.

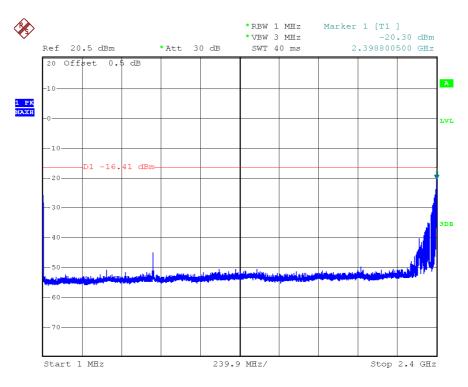
The test plots showed all spurious emission up to the tenth harmonic was measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

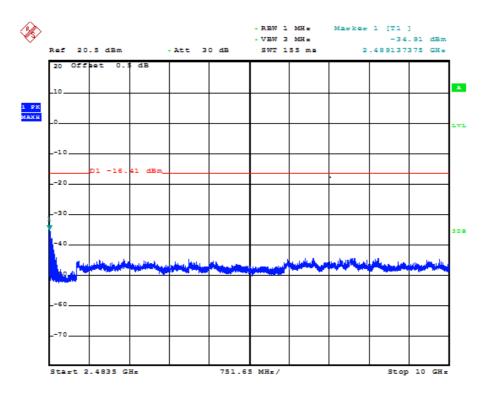
The test plots are attached as below.

TRF no.: FCC 15C TX b

FCC ID: X280071

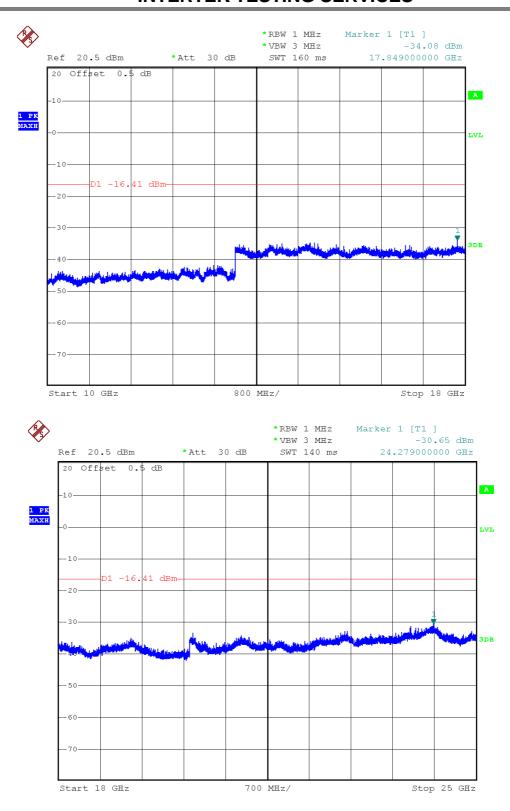
802.11b Channel 01 (2412MHz) Reference Level: 3.59dBm





TRF no.: FCC 15C_TX_b

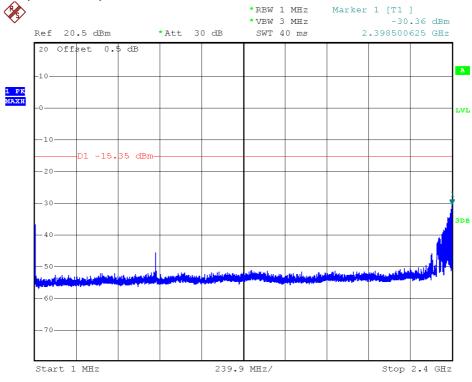
FCC ID: X280071

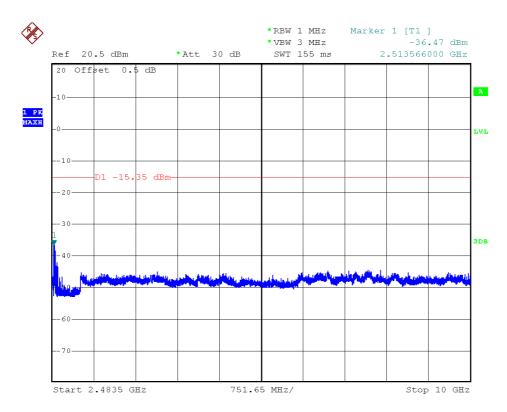


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FCC ID: X280071

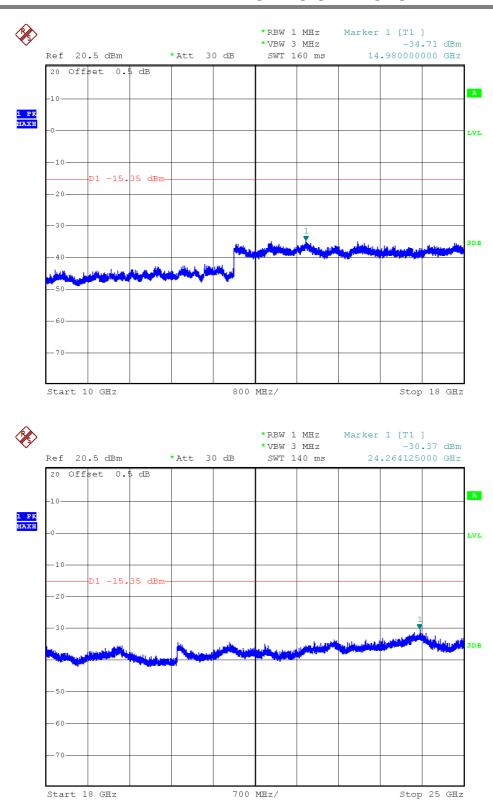
Channel 06 (2437MHz) Reference Level: 4.65dBm





TRF no.: FCC 15C_TX_b

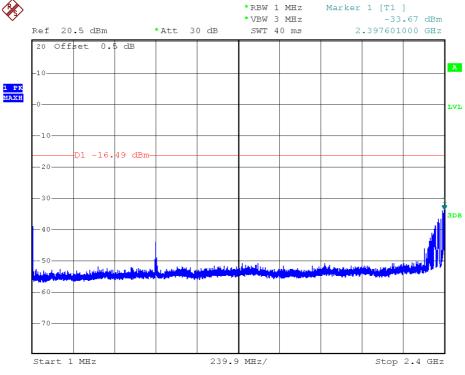
FCC ID: X280071

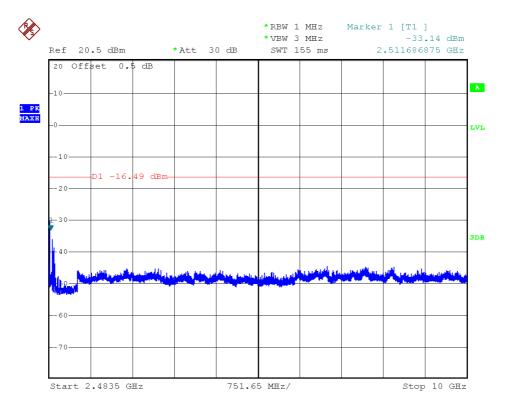


TRF no.: FCC 15C_TX_b

FCC ID: X280071

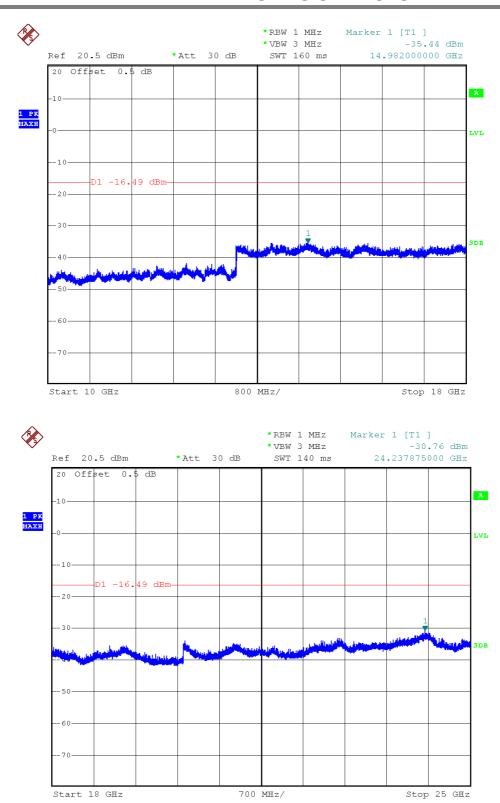






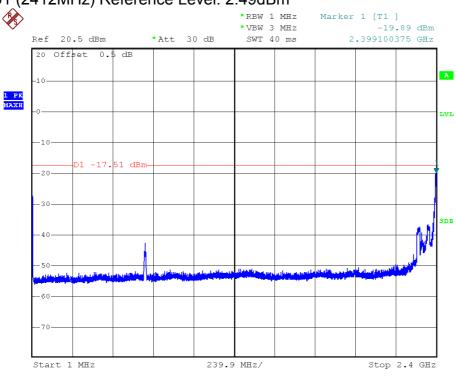
TRF no.: FCC 15C_TX_b

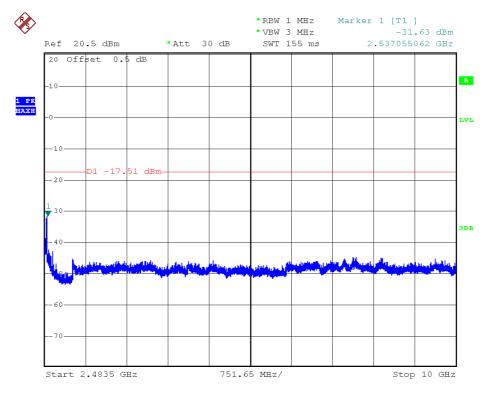
FCC ID: X280071



TRF no.: FCC 15C_TX_b FCC ID: X280071

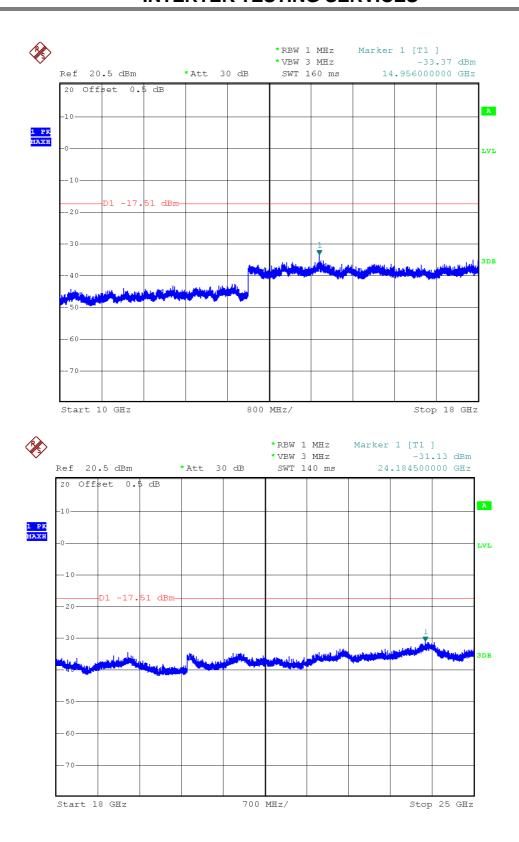
802.11g Channel 01 (2412MHz) Reference Level: 2.49dBm





TRF no.: FCC 15C_TX_b

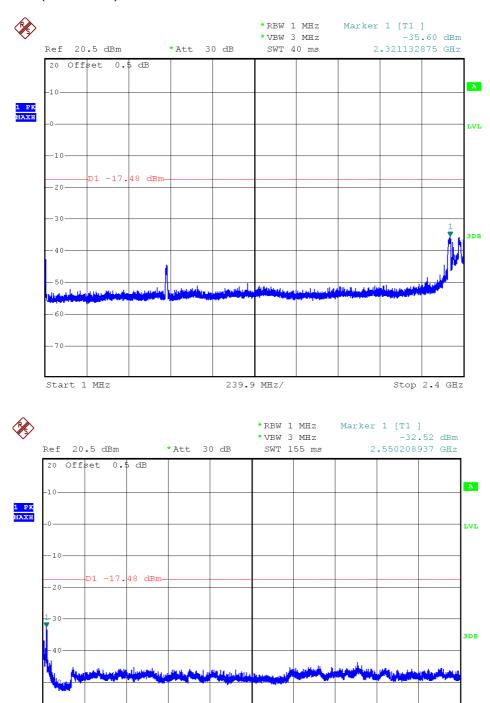
FCC ID: X280071



TRF no.: FCC 15C_TX_b

FCC ID: X280071

Channel 06 (2437MHz) Reference Level: 2.52dBm



751.65 MHz/

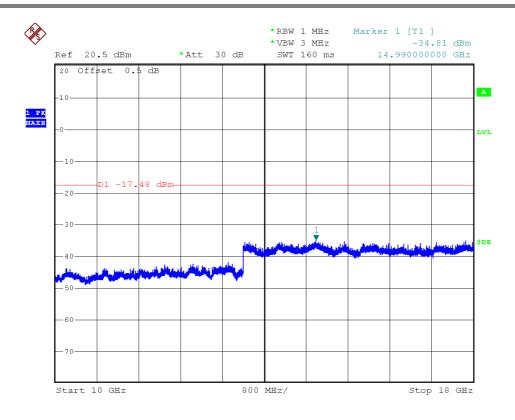
TRF no.: FCC 15C_TX_b

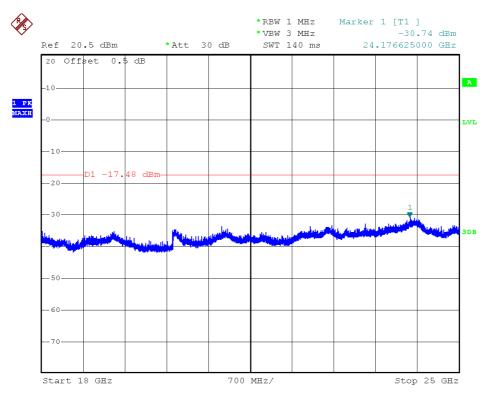
FCC ID: X280071

Report No.: 130513051SZN-001

Start 2.4835 GHz

Stop 10 GHz

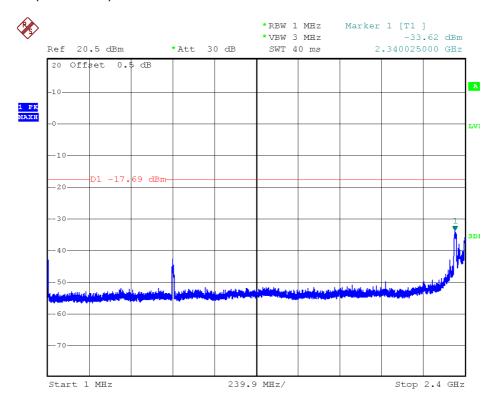


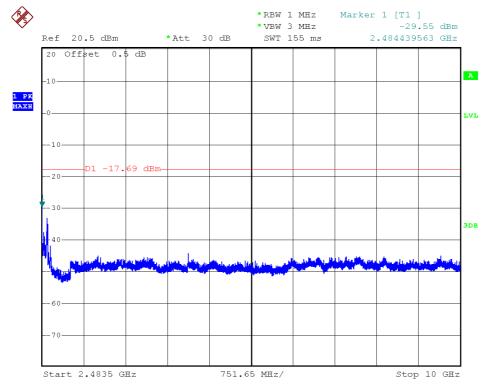


TRF no.: FCC 15C_TX_b

FCC ID: X280071

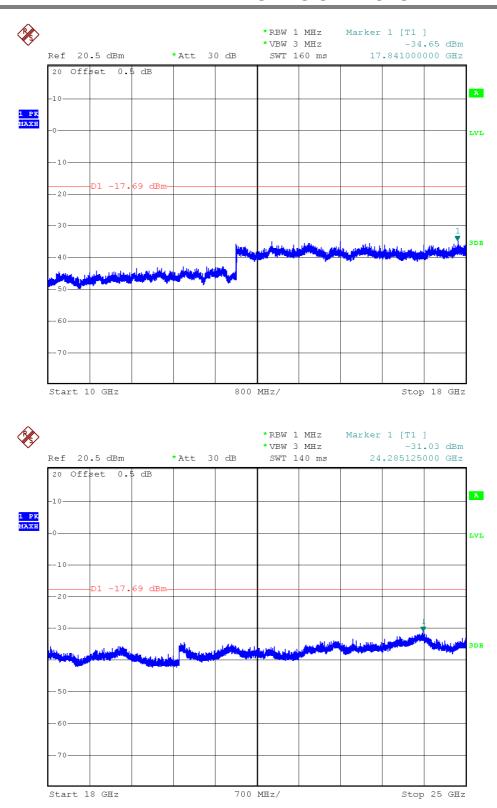
Channel 11 (2462MHz) Reference Level: 2.31dBm





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4.5 Out of Band Radiated Emissions (for emissions in 4.4 above that are less than 20dB below carrier), FCC Rule 15.247(d):

For out of band emissions that are close to or that exceed the 20dB attenuation requirement described in the specification, radiated measurements were performed at a 3m separation distance to determine whether these emissions complied with the general radiated emission requirement.

- [×] Not required, since all emissions are more than 20dB below fundamental
- [] See attached data sheet

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4.6 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b), (c):

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified.

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

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4.7 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD

Where FS = Field Strength in $dB\mu V/m$

RA = Receiver Amplitude (including preamplifier) in $dB\mu V$

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB AG = Amplifier Gain in dB

PD = Pulse Desensitization in dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

Example

Assume a receiver reading of 62.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB. The net field strength for comparison to the appropriate emission limit is 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = $62.0 \text{ dB}\mu\text{V}$ AF = 7.4 dBCF = 1.6 dBAG = 29.0 dBPD = 0 dBFS = $62 + 7.4 + 1.6 - 29 + 0 = 42 \text{ dB}\mu\text{V/m}$

Level in mV/m = Common Antilogarithm [(42 dB μ V/m)/20] = 125.9 μ V/m

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4.8 Radiated Spurious Emission

Worst Case Radiated Spurious Emission (802.11b) at 326.030MHz is passed by 5.7dB margin.

For the electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.

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Worst Case Operating Mode: 802.11b (TX-Channel 01)

Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	325.850	32.2	20.0	15.4	27.6	46.0	-18.4
Horizontal	400.055	31.1	20.0	16.7	27.8	46.0	-18.2
Horizontal	998.452	33.7	20.0	26.0	39.7	54.0	-14.3
Vertical	326.030	44.9	20.0	15.4	40.3	46.0	-5.7
Vertical	402.965	31.2	20.0	17.4	28.6	46.0	-17.4
Vertical	999.989	39.9	20.0	26.0	45.9	54.0	-8.1

NOTES: 1. Quasi-Peak detector is used except for others stated.

- 2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.

4. All emissions are below the QP limit.

TRF no.: FCC 15C_TX_b

FCC ID: X280071

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Applicant: Imagination Technologies Ltd / Pure

Date of Test: July 22, 2013 Model: Pure Contour i1 Air Mode: 802.11b (TX-Channel 01)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	51.5	36.7	34.2	49.0	74.0	-25.0
Horizontal	*2388.450	50.8	36.2	28.2	42.8	74.0	-31.2

Polarization	Frequency	Reading	Pre-	Antenna	Net	Average Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain (dB)	(dB)	(dBµV/m)	(dBµV/m)	
Horizontal	*4824.000	36.0	36.7	34.2	33.5	54.0	-20.5
Horizontal	*2388.450	36.2	36.2	28.2	28.2	54.0	-25.8

- NOTES: 1. Peak detector Data unless otherwise stated. Above 1000 MHz, RBW=1MHz, VBW=3MHz is used for Peak measurement, RBW=1MHz, VBW=10Hz is used for Average measurement.
 - 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 - 3. Negative value in the margin column shows emission below limit.
 - 4. Horn antenna used for the emission over 1000MHz.
 - * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

TRF no.: FCC 15C TX b

FCC ID: X280071

Report No.: 130513051SZN-001

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Applicant: Imagination Technologies Ltd / Pure

Date of Test: July 22, 2013 Model: Pure Contour i1 Air Mode: 802.11b (TX-Channel 06)

Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Peak Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	*4874.000	51.0	36.7	34.6	48.9	74.0	-25.1
Horizontal	*7311.000	52.8	36.7	37.1	53.2	74.0	-20.8
Horizontal	*9478.000	58.2	36.1	33.9	56.0	74.0	-18.0

Polarization	Frequency	Reading	Pre-	Antenna	Net	Average Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	*4874.000	35.6	36.7	34.6	33.5	54.0	-20.5
Horizontal	*7311.000	37.1	36.7	37.1	37.5	54.0	-16.5
Horizontal	*9478.000	43.4	36.1	33.9	41.2	54.0	-12.8

NOTES: 1. Peak detector Data unless otherwise stated. Above 1000 MHz, RBW=1MHz, VBW=3MHz is used for Peak measurement, RBW=1MHz, VBW=10Hz is used for Average measurement.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

TRF no.: FCC 15C TX b

FCC ID: X280071

Applicant: Imagination Technologies Ltd / Pure

Date of Test: July 22, 2013 Model: Pure Contour i1 Air Mode: 802.11b (TX-Channel 11)

Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Peak Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	*4924.000	50.6	36.7	34.6	48.5	74.0	-25.5
Horizontal	*7386.000	53.5	36.7	37.2	54.0	74.0	-20.0
Horizontal	*2483.924	51.8	36.2	28.0	43.6	74.0	-30.4

Polarization	Frequency	Reading	Pre-	Antenna	Net	Average Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	*4924.000	35.5	36.7	34.6	33.4	54.0	-20.6
Horizontal	*7386.000	38.4	36.7	37.2	38.9	54.0	-15.1
Horizontal	*2483.924	36.4	36.2	28.0	28.2	54.0	-25.8

- NOTES: 1. Peak detector Data unless otherwise stated. Above 1000 MHz, RBW=1MHz, VBW=3MHz is used for Peak measurement, RBW=1MHz, VBW=10Hz is used for Average measurement.
 - 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 - 3. Negative value in the margin column shows emission below limit.
 - 4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

TRF no.: FCC 15C_TX_b

FCC ID: X280071

Applicant: Imagination Technologies Ltd / Pure

Date of Test: July 22, 2013 Model: Pure Contour i1 Air Mode: 802.11g (TX-Channel 01)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	52.1	36.7	34.2	49.6	74.0	-24.4
Horizontal	*2388.710	52.0	36.2	27.8	43.6	74.0	-30.4

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4824.000	36.0	36.7	34.2	33.5	54.0	-20.5
Horizontal	*2388.710	36.7	36.2	27.8	28.3	54.0	-25.7

NOTES: 1. Peak detector Data unless otherwise stated. Above 1000 MHz, RBW=1MHz, VBW=3MHz is used for Peak measurement, RBW=1MHz, VBW=10Hz is used for Average measurement.

- 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
- 3. Negative value in the margin column shows emission below limit.
- 4. Horn antenna used for the emission over 1000MHz.

* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

TRF no.: FCC 15C_TX_b

FCC ID: X280071

Applicant: Imagination Technologies Ltd / Pure

Date of Test: July 22, 2013 Model: Pure Contour i1 Air Mode: 802.11g (TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	51.1	36.7	34.6	49.0	74.0	-25.0
Horizontal	*7311.000	52.2	36.7	37.1	52.6	74.0	-21.4

Polarization	Frequency (MHz)	Reading (dBµV)	Pre- Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	*4874.000	35.6	36.7	34.6	33.5	54.0	-20.5
Horizontal	*7311.000	37.5	36.7	37.1	37.9	54.0	-16.1

- NOTES: 1. Peak detector Data unless otherwise stated. Above 1000 MHz, RBW=1MHz, VBW=3MHz is used for Peak measurement, RBW=1MHz, VBW=10Hz is used for Average measurement.
 - 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 - 3. Negative value in the margin column shows emission below limit.
 - 4. Horn antenna used for the emission over 1000MHz.
 - * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

TRF no.: FCC 15C_TX_b

FCC ID: X280071

Applicant: Imagination Technologies Ltd / Pure

Date of Test: July 22, 2013 Model: Pure Contour i1 Air Mode: 802.11g (TX-Channel 11)

Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Peak Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	*4924.000	50.8	36.7	34.6	48.7	74.0	-25.3
Horizontal	*7386.000	54.5	36.7	37.2	55.0	74.0	-19.0
Horizontal	*2484.320	51.8	36.2	28.0	43.6	74.0	-30.4

Polarization	Frequency	Reading	Pre-	Antenna	Net	Average Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	*4924.000	35.2	36.7	34.6	33.1	54.0	-20.9
Horizontal	*7386.000	38.6	36.7	37.2	39.1	54.0	-14.9
Horizontal	*2484.320	36.5	36.2	28.0	28.3	54.0	-25.7

- NOTES: 1. Peak detector Data unless otherwise stated. Above 1000 MHz. RBW=1MHz, VBW=3MHz is used for Peak measurement, RBW=1MHz, VBW=10Hz is used for Average measurement.
 - 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 - 3. Negative value in the margin column shows emission below limit.
 - 4. Horn antenna used for the emission over 1000MHz.
 - Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

TRF no.: FCC 15C TX b

FCC ID: X280071

4.9 Conducted Emission

Worst Case Conducted Configuration At

0.274 MHz

Judgement: Passed by 11.4 dB margin

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

TRF no.: FCC 15C_TX_b

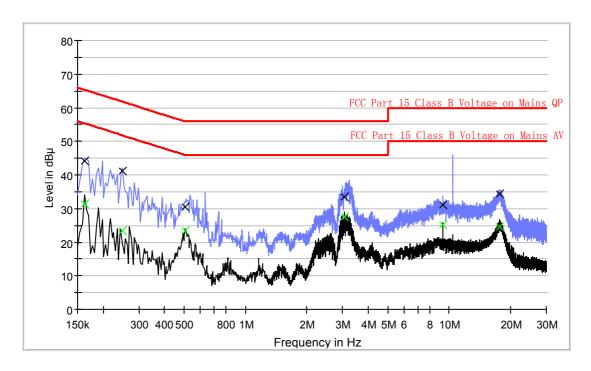
FCC ID: X280071

Applicant: Imagination Technologies Ltd / Pure

Date of Test: July 22, 2013 Model: Pure Contour i1 Air

Worst Case Operating Mode: WiFi link (802.11g)

Conducted Emission Test - FCC



Result Table QP

1000110 1011010 41							
Frequency (MHz)	QuasiPeak (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ		
0.162	44.2	L1	9.6	21.2	65.4		
0.250	41.2	L1	9.6	20.6	61.8		
0.506	30.5	L1	9.6	25.5	56.0		
3.062	33.5	L1	9.7	22.5	56.0		
9.286	31.1	L1	10.0	28.9	60.0		
17.594	34.3	L1	10.4	25.7	60.0		

Result Table AV

Frequency (MHz)	CAverage (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.162	31.4	L1	9.6	24.0	55.4
0.250	23.4	L1	9.6	28.4	51.8
0.506	23.4	L1	9.6	22.6	46.0
3.062	27.7	L1	9.7	18.3	46.0
9.286	25.1	L1	10.0	24.9	50.0
17.594	24.7	L1	10.4	25.3	50.0

TRF no.: FCC 15C_TX_b

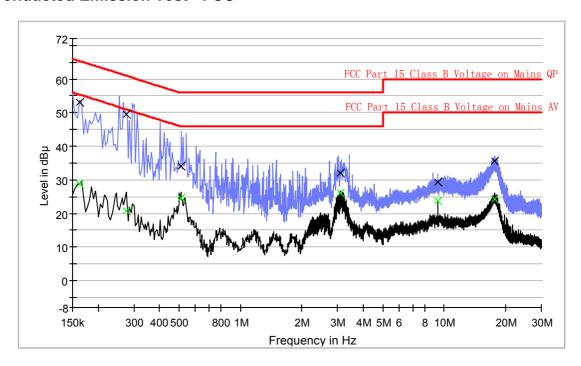
FCC ID: X280071

Applicant: Imagination Technologies Ltd / Pure

Date of Test: July 22, 2013 Model: Pure Contour i1 Air

Worst Case Operating Mode: WiFi link (802.11g)

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.162	53.1	N	9.7	12.3	65.4
0.274	49.6	N	9.6	11.4	61.0
0.510	34.2	N	9.6	21.8	56.0
3.094	31.9	N	9.7	24.1	56.0
9.286	29.4	N	10.0	30.6	60.0
17.698	35.6	N	10.5	24.4	60.0

Result Table AV

Frequency	CAverage	Line	Corr.	Margin	Limit
(MHz)	(dB µ V)		(dB)	(dB)	(dB µ V)
0.162	28.7	N	9.7	26.7	55.4
0.274	20.6	N	9.6	30.4	51.0
0.510	24.5	N	9.6	21.5	46.0
3.094	26.1	N	9.7	19.9	46.0
9.286	23.6	N	10.0	26.4	50.0
17.698	24.3	N	10.5	25.7	50.0

TRF no.: FCC 15C_TX_b

FCC ID: X280071

Date	licant: Imagination Technologies Ltd / Pure e of Test: July 22, 2013 el: Pure Contour i1 Air
4.10	Radiated Emissions from Digital Section of Transceiver, FCC Ref: 15.109
[]	Not required - No digital part
[]	Test results are attached
[x]	Included in the separated report.

TRF no.: FCC 15C_TX_b

FCC ID: X280071

Applicant: Imagination Technologies Ltd / Pure

Date of Test: July 22, 2013 Model: Pure Contour i1 Air

4.11 Transmitter Duty Cycle Calculation and Measurements, FCC Rule 15.35(b), (c)

The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SWEP function on the analyzer was set to ZERO SPAN. The Transmitter ON time was determined from the resultant time-amplitude display:

	See attached spectrum analyzer chart (s) for Transmitter timing
	See Transmitter timing diagram provided by manufacturer
Х	Not applicable, duty cycle was not used.

TRF no.: FCC 15C TX b

FCC ID: X280071

EXHIBIT 5

EQUIPMENT PHOTOGRAPHS

TRF no.: FCC 15C_TX_b

FCC ID: X280071

5.0 **Equipment Photographs**

For electronic filing, the photographs are saved with filename: external photos.doc & internal photos.pdf.

TRF no.: FCC 15C_TX_b

FCC ID: X280071

EXHIBIT 6

PRODUCT LABELLING

TRF no.: FCC 15C_TX_b

FCC ID: X280071

6.0 **Product Labeling**

For electronic filing, the FCC ID label artwork and location is saved with filename: label.pdf.

TRF no.: FCC 15C_TX_b

FCC ID: X280071

EXHIBIT 7

TECHNICAL SPECIFICATIONS

TRF no.: FCC 15C_TX_b

FCC ID: X280071

7.0 <u>Technical Specifications</u>

For electronic filing, the block diagram and circuit diagram are saved with filename: block.pdf and circuit.pdf respectively.

TRF no.: FCC 15C_TX_b

FCC ID: X280071

EXHIBIT 8

INSTRUCTION MANUAL

TRF no.: FCC 15C_TX_b

FCC ID: X280071

8.0 **Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

TRF no.: FCC 15C_TX_b

FCC ID: X280071

EXHIBIT 9

CONFIDENTIALITY REQUEST

TRF no.: FCC 15C_TX_b

FCC ID: X280071

9.0 **Confidentiality Request**

For electronic filing, the confidentiality request of the tested EUT is saved with filename: request.pdf.

TRF no.: FCC 15C_TX_b

FCC ID: X280071

EXHIBIT 10

MISCELLANEOUS INFORMATION

TRF no.: FCC 15C_TX_b

FCC ID: X280071

10.0 <u>Discussion of Pulse Desensitization</u>

The determination of pulse desensitivity was made in accordance with Hewlett Packard Application Note 150-2, *Spectrum Analysis ... Pulsed RF.*

Pulse desensitivity is not applicable for this device since the transmitter transmits the RF signal continuously.

TRF no.: FCC 15C_TX_b

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EXHIBIT 11

TEST EQUIPMENT LIST

TRF no.: FCC 15C_TX_b

FCC ID: X280071

11.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	29-Jun-13	29-Jun-14
SZ185-01	EMI Receiver	R&S	ESCI	100547	12-Mar-13	12-Mar-14
SZ061-08	Horn Antenna	ETS	3115	00092346	3-Nov-12	3-Nov-13
SZ061-07	Horn Antenna	ETS	3160-09	00083067	27-Aug-12	27-Aug-13
SZ061-06	Active Loop Antenna	Electro- Metrics	EM-6876	217	13-May-13	13-May-14
SZ056-03	Spectrum Analyzer	R&S	FSP 30	101148	12-Mar-13	12-Mar-14
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	12-Mar-13	12-Mar-14
SZ182-02	RF Power Meter	Anritsu	ML2496A	1302005	28-Feb-13	28-Feb-14
SZ182-02- 01	Pulse Power Sensor	Anritsu	MA2411B	1207429	28-Feb-13	28-Feb-14
SZ188-01	Anechoic Chamber	ETS	RFD-F/A- 100	4102	2-Mar-13	2-Mar-14
SZ062-02	RF Cable	RADIALL	RG 213U		20-Jul-13	20-Jan-14
SZ062-05	RF Cable	RADIALL	0.04- 26.5GHz		22-Apr-13	22-Oct-13
SZ062-12	RF Cable	RADIALL	0.04- 26.5GHz		22-Apr-13	22-Oct-13
SZ067-04	Notch Filter	Micro-Tronics	BRM5070 2-02		20-Jul-13	20-Jan-14
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	5-Nov-12	5-Nov-13
SZ187-01	Two-Line V- Network	R&S	ENV216	100072	5-Nov-12	5-Nov-13
SZ187-02	Two-Line V- Network	R&S	ENV216	100073	5-Nov-12	5-Nov-13
SZ188-03	Shielding Room	ETS	RFD-100	4100	23-Aug-12	23-Aug-13

TRF no.: FCC 15C_TX_b

FCC ID: X280071